REMARKS

Claims 1 and 4-15 are pending in the current application. Claim 1 is in independent form. Claims 2, 3 and 16-20 have been cancelled. No new matter has been added. In view of the above amendments and following remarks, favorable reconsideration and allowance of the present application is respectfully requested.

Initially, Applicants appreciate the Examiner's acknowledgment that all certified copies pertaining to foreign priority claimed under 35 U.S.C. §119 have been received and the indication that the references submitted in the Information Disclosure Statements filed on June 20, 2005 and March 16, 2006 have been considered.

Applicants note that the Examiner has not indicated whether the drawings filed on June 20, 2005 are accepted, or objected to, by the Examiner. As there is no discussion in the *Detailed Action* indicating that the drawings are objected to, Applicants will assume that the drawings are acceptable unless indicated otherwise in the next Patent Office communication.

I. CLAIM AMENDMENTS

By the present Amendment, Applicants submit that independent claim 1 has been amended to include similar subject matter as previously recited in cancelled claim 3.

Thus, Applicants submit that the amendments do not introduce new matter and/or raise new issues.

II. EXAMPLE EMBODIMENTS

Example embodiments teach that "...a biochip according to an embodiment of the invention resides in the fact that a significantly larger number of catcher molecules can be arranged within the reaction layer than in a monomolecular layer on the carrier surface and on the surfaces of the electrodes." Specification, paragraph [0011]. Thus, the number of detected target molecules, which react with the catcher molecules, increases.

Furthermore, example embodiments teach that "...the thickness of the reaction layer must not be chosen to be too large because this would result in excessively long diffusion paths and, associated therewith, excessively long reaction times for the transport of the target molecules to the catcher molecules." Specification, paragraph [0012].

In a substantially thick gel layer, the field intensity in the edge region towards the surface of the gel layer may be insufficient for transporting target molecules, or the catcher molecules that have reacted with the target molecules, to the electrodes and electro-chemical detection thereof.

Thus, in order to obtain a good field distribution in the gel, example embodiments disclose a range for the thickness of the gel, the range being dependent on the size of the electrodes. In the disclosed range, the electrical field distribution in the gel is modified in such a manner that the target molecules in the analyte solution reach the electrodes and are detected electro-chemically with the aid of the electrodes.

III. CITED ART GROUNDS OF REJECTION

Claims 1, 9 and 11-15 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Albers et al. (hereinafter "Albers"), WO 00/62048 (equivalent U.S. Patent No. 7,208,077); claims 1, 2, 8, 9, 18 and 19 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Coté et al. (hereinafter "Coté"), U.S. Patent No. 6,485,703; claims 1-6, 8, 15, 16 and 18-20 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Albers in view of Coté and further in view of Zhou et al. (hereinafter "Zhou"), U.S. Patent Publication No. 2004/0121339; and claims 1-3, 6 and 10 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Albers in view of Coté and further in view of Valint et al. (hereinafter "Valint"), U.S. Patent Publication No. 2002/0102415. Applicants respectfully traverse the rejections.

A. INDEPENDENT CLAIM 1

Amended independent claim 1 is directed to a DNA chip including (*inter alia*) an array of spots containing catcher molecules, each spot being assigned a microelectrode arrangement for detecting binding events between the catcher molecules and target molecules applied via an analyte solution, the electrode arrangement being at least partially embedded in a hydrophilic reaction layer "in which immobilized catcher molecules are distributed three-dimensionally," "the hydrophilic reaction layer having a thickness approximately in the range of 1*L* to 5 *L*, *L* being the sum of electrode width and electrode spacing." Applicants submit that non-limiting, example

embodiments may be found, at least, in paragraph [0014] of the Specification, as originally-filed. Applicants submit that the art relied upon by the Examiner fails to teach, or suggest, the above features recited in independent claim 1.

i. THE COMBINATION OF ALBERS AND COTÉ

Albers, directed to an electric sensor array that is provided with several sensor positions that each have at least two microelectrodes, teaches that "[i]n a particular embodiment, an electric sensor array is covered with a hydrogel after immobilization of the affinity-binding molecules or after a molecular detection reaction and corresponding washing processes have occurred...When covering the surface-linked affinity-binding molecules with a hydrogel, the analytes may be introduced into the gel or approached to the affinity partners or added by diffusion processes actively by dosage or electrophoretically by application of electric fields by auxiliary electrodes." Albers, col. 23, lines 21-31. Thus, the catcher molecules in Albers are immbolized on a surface, instead of being "distributed three-dimensionally" as recited in independent claim 1.

Furthermore, Albers fails to disclose a thickness for the gel layer. Thus, Albers also fails to establish a correlation between the thickness of the hydrogel and the width and spacing of the electrode.

Coté, directed to a polymeric composition for the detection of analytes in vivo, teaches that a polymer hydrogel precursor solution is deposited on the surface of a gold electrode such that "[t]he resulting film thickness was

approximately 100μm." Coté, col. 41, ll. 52-55. Thus, regardless of the width and spacing of the electrode, the thickness of the hydrogel is 100μm. As such, Coté also fails to establish a correlation between the thickness of the hydrogel and the electrode width and spacing. Accordingly, Coté fails to cure the deficiencies of Albers with respect to amended independent claim 1.

For at least these reasons, Applicants submit that Albers in view of Coté fails to teach, or suggest, "a hydrophilic reaction layer which is permeable to target molecules and in which immobilized catcher molecules are distributed three-dimensionally, the hydrophilic reaction layer having a thickness approximately in the range of 1L to 5 L, L being the sum of electrode width and electrode spacing" as recited in amended independent claim 1.

ii. SECONDARY REFERENCES

Applicants submit that all other secondary references, Zhou and Valint, relied upon in the rejection fail to teach, or suggest, a hydrophilic reaction layer "in which immobilized catcher molecules are distributed three-dimensionally, the hydrophilic reaction layer having a thickness approximately in the range of 1L to 5 L, L being the sum of electrode width and electrode spacing." Thus, Zhou and/or Valint fail to cure the above deficiencies of Albers and Coté with respect to amended independent claim 1.

II. PROVISIONAL DOUBLE PATENTING REJECTION

Claims 1-6, 8-9, 11-16 and 18-20 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as allegedly being unpatentable over claims 1-18 of co-pending U.S. Application No. 10/539,817 in view of Coté.

Applicants note the Examiner's position. However, Applicants submit that until either U.S. Application No. 10/539,817 or the present application issues into a patent (as acknowledged by the provisional status of the rejection), Applicants submit that the rejection is premature.

* * * * *

END OF REMARKS

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CONCLUSION

Accordingly, in view of the above, reconsideration of the rejections and allowance of each of claims 1 and 4-15 in connection with the present application is earnestly solicited.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants hereby petition for a one (1) month extension of time for filing a reply to the outstanding Action and submit the required $120.00 extension fee herewith.

Should there be any matters that need to be resolved in the present application; the Examiner is respectfully requested to contact the undersigned at the telephone number below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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Enclosure: Check No. 04626 for $120.00